PROJECT FACT SHEET

CONTRACT TITLE: Fatigue Failure in Top Drive Rigs (PARTNERSHIP)

DATE REVIEWED: 08/04/1994 **DATE REVISED:** 08/04/1994

OBJECTIVE: Characterization of the loading associated with jarring by reviewing literature, providing instrumentation, and performing numerical modeling on pertinent components.

ID NUMBER: P-16

B & R CODE: AC0530000

CONTRACT PERFORMANCE PERIOD:
07/01/1993 to 06/30/1994
PROGRAM: Supporting Research
RESEARCH AREA: Production

DOE PROGRAM MANAGER:
NAME: Dr. Arthur Hartstein
COMMERCIAL: (301) 903-2760

DOE PROJECT MANAGER:
NAME: Rhonda P. Lindsey
LOCATION: BPO
COMMERCIAL: (918) 337-4407

CONTRACTOR: Los Alamos National Lab
& Varco Engineering
ADDR: P.O. Box 1663
EES-DO/MS D446
Los Alamos, NM 87545

CONTRACT PROJECT MANAGER:

NAME: Dr. Robert J. Hanold
ADDR: Los Alamos National Lab
EES-DO/MS D446
Los Alamos, NM 87545
PHONE: (505) 667-1698
FAX: (505) 667-3494

PROJECT SITE:
Los Alamos, NM

SCHEDULED MILESTONES:

FUNDING (1000'S)	DOE	OTHER	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	33	0	0	33
FISCAL YR 1994	50	0	0	50
FUTURE FUNDS	0	0	0	0
TOTAL EST'D FUNDS	83	0	0	83

PROJECT DESCRIPTION: Los Alamos will evaluate the structural loads that are transmitted to a top drive during jarring operations. Past performance of top drives while jarring indicate potential safety problems during the event. The Los Alamos effort will characterize the loading associated with jarring by reviewing literature, providing instrumentation, and performing numerical modeling on pertinent components. We plan to familiarize ourselves with the operation of top drives particularly during a jarring operation. If possible we plan to instrument a top drive during a jarring operation and take accelerometer and strain data during the event. We will use the data to characterize the loading events that occur during a jar. After obtaining test data, we will numerically model components of the top drive to determine structural response to the load environment.

PRESENT STATUS: Funding received, July 1993.

ACCOMPLISHMENTS: We have started the project by meeting with the leading manufacturer of Top Drives, VARCO BJ, reviewed most of the literature, and contacted Bowen Corp. Below is a summary of accomplishments and what we plan to do in the very near future.

1. Kick off meeting at VARCO to determine what is currently available in commercial strain instrumentation. We also inspected top drive components in their factory and discussed parts which are failing and fixes that have occurred.

2. Contacted Bowen Corporation to determine the loading cycle during the jarring end of the operation.

3. Completed a literature search in the area of Top Drives, and jarring operations and are currently studying those papers.

4. We are scheduled to go to an offshore platform to assess operational conditions during drilling, and with VARCO are assessing possibilities for instrumentation on rig during jarring operations.

BACKGROUND: Drilling operations with top drive rigs have proven increased efficiency during offshore operations. Problems that occur with drives often involve safety concerns since heavy metal objects are suspended well above the rig floor. Failure of parts results in heavy objects falling to the rig floor where personnel and equipment are present. Jarring operations seem to involve the most severe structural environment and are thus being addressed in this study.